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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,042	08/04/2003	James Pan	H1930	5299
29393	7590	03/21/2005	EXAMINER	
ESCHWEILER & ASSOCIATES, LLC NATIONAL CITY BANK BUILDING 629 EUCLID AVE., SUITE 1210 CLEVELAND, OH 44114			LE, DUNG ANH	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/634,042

Applicant(s)

PAN ET AL.

Examiner

DUNG A. LE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 and 20-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14, 15 and 17 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Oath/Declaration*

The oath/declaration filed on 8/4/2003 is acceptable.

### *Election/Restriction*

Applicant's election with traverse of **Species group II for claim 14-19, drawn to a method of fabricating a dual level memory cell** (class 438/ subclass 257) is acknowledged.

Because Applicant did not distinctly and specifically point out the supposed error in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Applicants have the right to file a divisional application covering the subject matter of the non-elected claims **Species group I, III- V**.

The traversal is on the ground(s) that see the election paper. This is not found persuasive because the fields of search for the plural of species claims are NOT coextensive and the determinations of patentability of the plural of species claims are different, that is the plural of species limitations are given weight differently in determining the patentability of the claimed inventions. For example, this application contains claims directed to the following patentably distinct species of the claimed invention:

**Species I, e.g. claims 1-13: drawn to structure of dual level memory cell. (class 257/ subclass 316)**

**Species III, e.g. claims 20-22: drawn to Method of programming a dual level memory cell. (class 365/ subclass 185.28)**

**Species IV, e.g. claims 23-24: drawn to Method erasing a dual level memory cell. (class 365/ subclass 185.29)**

**Species V, e.g. claims 25-26: drawn to Method of reading a dual level memory cell. (class 365/ subclass 185.21)**

Therefore, the strategies for doing text searching of the plural of species are different. Thus, separate searches are required.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Information Disclosure Statement***

This office acknowledges of the following items from the Applicant:

Information Disclosure Statement (IDS) filed on 8/4/2003 and made of record .

The references cited on the PTOL 1449 form have been considered.

#### ***Drawings***

The drawings are objected to for the following reasons.

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

The specification is objected to for the following reason:

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (see MPEP § 606.01).

A new abstract is required that is clearly indicative the invention to which the claims are directed.

Note that, the claims are directed to a method of making a dual level memory cell.

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Rejections**

#### **Claim Rejections - 35 USC § 112**

Claim 14 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation in claim 17 (it depends on claim 14) “wherein the second poly layer is formed orthogonal to the first poly layer” is vague and indefinite. It is not clear how to

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form the second poly layer is formed orthogonal to the first poly layer, note that the first poly layer is parallel to substrate.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 14, 18 and 19 are rejected under 35 USC 102 (b) as being anticipated by Cremonesi et al. (6329254 B1).**

Cremonesi et al. teaches a method of fabricating a dual level memory cell comprising:

forming a first active region 13 and a second active region 14 in a substrate 4;  
forming a first insulator dielectric 11 on the substrate; forming a first poly layer 7 on the first insulator dielectric; forming a second insulator dielectric 9 on at least a portion of the first poly layer; and forming a second poly layer 8 on the second insulator dielectric.

**Regarding claim 18**, wherein forming the first insulator dielectric comprises forming a first oxide layer on the substrate, forming nitride on the first oxide layer, and forming a second oxide layer on the nitride. (col 2, lines 25-30).

**Regarding claim 19**, the first active region and the second active region are formed to be n-type and the substrate is p-type. (col 2, lines 20 and 39)

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 15 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Cremonesi et al. in view of Rolandi (5923975).**

Cremonesi et al. teaches the claimed invention as applied in claim 14, except for the step of forming a trench in the substrate between the first active region and the second active region prior to forming the first insulator dielectric such that a vertical structure is formed by the first insulator dielectric.

Rolandi discloses the step of forming a trench in the substrate between the first active region and the second active region prior to forming the first insulator dielectric such that a vertical structure is formed by the first insulator dielectric as cited in fig. 12.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form a trench in the substrate between the first active region and the second active region prior to forming the first insulator dielectric such that a vertical structure is formed by the first insulator dielectric, in order to obtain the suitable device for the particular application in which they are employed.

#### **Reasons for Indication of Allowable Subject Matter**

**Claim 16 is objected** to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, since the prior made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. Cremonesi et al. (U.S. Patent No. 6329254 B1) and Rolandi (U.S. Patent No. 5923975), taken individually or in combination, do not teach the claimed invention having the step of forming the vertical structure is V-shaped.

If Applicants are aware of better art than that which has been cited, they are required to call such to attention of the examiner.

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.




A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung A. Le whose telephone number is (571) 272-1784. The examiner can normally be reached on Monday-Tuesday and Thursday 6:00am- 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUNG A. LE   
Primary Examiner  
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